I (WE) CLAIM:

1. A method for acquiring ultrasound data for display, the method comprising:

(a) scanning along a two-dimensional plane over a first lateral range with ultrasound; and

(b) scanning a three-dimensional volume over a second lateral range with ultrasound, the second lateral range less than the first lateral range within the two-dimensional plane;

wherein (a) and (b) are interleaved at least in part

2. The method of Claim 1 wherein (a) comprises scanning over a first scan angle range and (b) comprises scanning over a second scan angle range.

3. The method of Claim 2 wherein (a) comprises scanning over an about 90 degree sector or Vector® region.

4. The method of Claim 1 wherein (b) comprises scanning the three-dimensional volume over a third lateral range perpendicular to the two-dimensional plane, the third lateral range being less than the first lateral range.

5. The method of Claim 1 further comprising:

(c) generating a two-dimensional image as a function of (a); and

(d) generating a three-dimensional representation as a function of (b), a lateral extent on a display of the two-dimensional image being greater than the three-dimensional representation.

6. The method of Claim 1 further comprising:

(c) generating a two-dimensional B-mode image as a function of (a); and

(d) generating a three-dimensional Doppler representation as a function of (b).

7. The method of Claim 1 further comprising:

(c) setting the second lateral range as a function of user input.

8. The method of Claim 1 wherein (a) comprises scanning in response to a first imaging parameter in addition to the first lateral range, and (b) comprises scanning in response to a second imaging parameter in addition to the second lateral range, the first and second imaging parameters being a same type of parameter with different values.

9. The method of Claim 8 wherein (a) comprises imaging with one of: center frequency, bandwidth, aperture, apodization, scan geometry, scan line density and combinations thereof different than for (b).

10. The method of Claim 1 wherein (a) comprises scanning with a higher spatial resolution than (b).

11. A system for acquiring ultrasound data for display, the system comprising:

a transducer;

a beamformer connected with the transducer, the beamformer operable to interleave a scan along a two-dimensional plane over a first lateral range and a scan of a three-dimensional volume over a second lateral range, the second lateral range less than the first lateral range within the two-dimensional plane.

12. The system of Claim 11 wherein the beamformer is operable to scan over a first scan angle range as the first lateral range and scan over a second scan angle range as the second lateral range.

13. The system of Claim 11 further comprising:

a display connected with the beamformer, the display operable to generate a two-dimensional image as a function of the scan over the first lateral range and to generate a three-dimensional representation as a function of the scan over the

second lateral range, a lateral extent on a display of the two-dimensional image being greater than the three-dimensional representation.

14. The system of Claim 13 wherein the two-dimensional image comprises a B-mode image and the three-dimensional representation comprises a Color Doppler image.

15. The system of Claim 11 further comprising:

a user input, the second lateral range being a function of data from the user input.

16. The system of Claim 11 wherein the beamformer is operable to scan an outer region of the two-dimensional plane with a higher resolution than the scan of the three-dimensional volume.

17. The system of Claim 11 further comprising a user input, the steering angle of the three-dimensional volume being a function of data from the user input.

18. A method for acquiring ultrasound data for display, the method comprising:

(a) scanning within a three-dimensional volume with a first spatial resolution; and

(b) scanning within a three-dimensional sub-volume of the volume with a second spatial resolution, the second spatial resolution higher than the first spatial resolution;

wherein (a) and (b) are acquired within a same imaging session.

19. The method of Claim 18 wherein (b) comprises scanning within the entire three-dimensional sub-volume at the second spatial resolution and (a) comprises scanning at the first spatial resolution within the entire three-dimensional volume other than the sub-volume.

20. The method of Claim 18 wherein (a) comprises scanning over a first lateral range and (b) comprises scanning over a second lateral range, the second lateral range less than the first lateral range along at least one dimension.

21. The method of Claim 20 wherein the sub-volume has lesser lateral range along three dimensions than the volume.

22. The method of Claim 20 wherein (a) comprises scanning over a first range of scan angles and (b) comprises scanning over a second range of scan angles, the second range less than the first range.

23. The method of Claim 18 further comprising:

(c) generating a first three-dimensional representation as a function of (a); and

(d) generating a second three-dimensional representation as a function of (b), the second three-dimensional having a higher spatial resolution than the first three-dimensional representation.

24. The method of Claim 18 further comprising:

(c) setting the sub-volume size as a function of user input.

25. The method of Claim 18 wherein (a) comprises scanning with one of: center frequency, bandwidth, aperture, apodization, scan geometry, scan line density and combinations thereof different than for (b).

26. The method of Claim 18 wherein the second spatial resolution is greater than 1/3 the first spatial resolution along at least one dimension.

27. A system for acquiring ultrasound data for display, the system comprising:

a transducer;

a beamformer connected with the transducer, the beamformer operable to interleave a scan within a three-dimensional volume with a first spatial resolution

and a scan within a three-dimensional sub-volume of the volume with a second spatial resolution, the second spatial resolution higher than the first spatial resolution.

28. The system of Claim 27 further comprising:

a user input, the beamformer responsive to data from the user input indicating one of a size and position of the sub-volume relative to the volume.

29. The system of Claim 27 wherein the beamformer is operable to scan at the first and second spatial resolutions in response to different values for at least one of: center frequency, bandwidth, aperture, apodization, scan geometry and scan line density.